STATEMENT OF BASIS
Marshall Space Flight Center
Marshall SFC, Alabama
(709-0014)

This proposed modified Title V Major Source Operating Permit renewal is issued under the provisions of ADEM Admin. Code R. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans and other documents attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

The significant sources of air pollutants at this facility include boilers, internal combustion engines, surface coating operations, engine testing, a bulk gasoline plant, cleaning operations, and abrasive blasting operations.

Marshall Space Flight Center (MSFC) is manned 8,760 hours per year. Based on the Title V permit application, this facility is a potential major source for PM, CO, NOx, SO_2, VOC and HAPs.

This Title V Major Source Operating Permit (MSOP) renewal will also incorporate equipment covered by Air Permits into the Major Source Operating Permit that have been issued to Marshall Space Flight Center since the last MSOP issuance. The Air Permits that are being incorporated into the MSOP are the following:

709-0014-X011	**4.185 MMBtu/hr No. 2 Fuel Oil Boiler in Building 4619**
709-0014-X012	**Foam Coating of Miscellaneous Metal Parts of Space Vehicles located at Building 4739**
709-0014-X013	**Two 1355 hp Internal Combustion Pump Engines in Building 4567**
709-0014-X014	**Foam Coating of Miscellaneous Parts of Space Vehicles in Building 4765**
709-0014-X015	**27.1 Hp Diesel Emergency Generator (Building 4601)**
709-0014-X016	**2919 Hp (2180 KW) Diesel Emergency Generator (Building 4208)**
709-0014-X017	**80.4 Hp Diesel Emergency Generator (Building 4250)**

The following units have been removed from the facility and are being removed from MSFC's MSOP:

Bulk Plant	**Storage Tank Nos. 4632, 4633, and 4636**
Appendix A Boiler	**Boiler No. 4628-EX-02**
Boiler	**Boiler No. 4755-EX-02**

Small Natural Gas Boilers - Appendix A

These boilers are classified as small natural gas boilers. These boilers burn natural gas or propane only.

Appendix A – Small Natural Gas Boilers		
Building Number	**Unit #**	**Rated Capacity (MMBTU/hr)**
4209	4209-01	2.144
4209	4209-02	2.144
4491	4491-EX-03	1.68
4708	4708-E8-02	1.825
4718	4718-EX-01	5.10
4776	4776-EX-01	1.25

Emissions Standards:

Opacity Standards:

These sources shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%.

ADEM Admin. Code R. 334-3-4-.01(1).

Particulate Matter Emission Standards:

Particulate matter emissions from each boiler shall not exceed the allowable set by Rule 335-3-4-.03(1).

This section limits particulate matter emissions from fuel burning equipment. This is calculated using the fuel burning equipment equation:

$E = 1.38H^{-0.44}$

Where E = Emissions in pounds per million BTU

H = Heat Input in millions of BTU/hr

ADEM Admin. Code R. 335-3-4-.03-(1)

Emissions from the boilers are expected to be well below the allowable emission rate since natural gas would be the only fuel source.

SO_2 Emission Standards:

These units shall burn natural gas or propane only.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

Sulfur Dioxide emissions from each boiler shall not exceed the allowable set by Rule 335-3-5-.01.

This section limits sulfur dioxide emissions from fuel burning equipment to 4.0 pounds per million BTU of heat input, for Category II counties.

ADEM Admin. Code R. 335-3-5-.01(1)(b)

Emissions from the boilers are expected to be well below the allowable emission rate set by Rule 335-3-5-.01(1)(b) since natural gas would be the only fuel source.

Expected Emissions:

The maximum expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, from the largest emission source in the small natural gas boiler category (Building 4718 – 5.10 MMBtu/hr) are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	0.04	0.17
$S0_2$	0.00	0.01
NO_x	0.50	2.19
CO	0.42	1.84
VOC	0.03	0.12

The maximum total expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, from all the small natural gas boilers are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	0.11	0.46
$S0_2$	0.01	0.04
NO_x	1.39	6.07
CO	1.16	5.10
VOC	0.08	0.33

Periodic Monitoring:
Based on the low level of expected emissions from these sources as compared to the regulatory allowable no periodic monitoring is required.

CAM

These sources are not subject to CAM since they do not have a control device.

Recordkeeping and Reporting:
These sources are subject to no additional specific requirements other than those listed in the General Permit Provisos.

Small Fuel Oil Boilers - Appendix B
These boilers are classified as small fuel oil boilers. These boilers burn natural gas or No.2 fuel oil only. The following boilers fit this category:

Appendix B – Small Fuel Oil Boilers		
Building Number	**Unit #**	**Rated Capacity (MMBTU/hr)**
4675	4675-999-01	5.40
4675	4675-999-02	5.40
4675	4675-999-03	5.40
N/A	Portable Boiler 1	8.37
N/A	Portable Boiler 2	4.185
N/A	Portable Boiler 3	0.84
N/A	Portable Boiler 4	2.092

Emissions Standards:

Opacity Standards:

These sources shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%.

ADEM Admin. Code R. 334-3-4-.01(1).

Particulate Matter Emission Standards:

Particulate matter emissions from each boiler shall not exceed the allowable set by Rule 335-3-4-.03(1).

This section limits particulate matter emissions from fuel burning equipment. This is calculated using the fuel burning equipment equation:

$E = 1.38H^{-0.44}$

Where E = Emissions in pounds per million BTU

H = Heat Input in millions of BTU/hr

ADEM Admin. Code R. 335-3-4-.03-(1)

Emissions from these boilers are expected to be well below the allowable emission rate since natural gas and No.2 Fuel Oil would be the only fuel sources.

SO_2 Emission Standards:

These units shall burn only natural gas and No. 2 fuel oil. The sulfur content of the No.2 fuel oil shall not exceed 0.5% by weight.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

Sulfur Dioxide emissions from each boiler shall not exceed the allowable set by Rule 335-3-5-.01.

This section limits sulfur dioxide emissions from fuel burning equipment to 4.0 pounds per million BTU of heat input, for Category II counties.

ADEM Admin. Code R. 335-3-5-.01(1)(b)

Emissions from the boilers are expected to be well below the allowable emission rate set by Rule 335-3-5-.01(1)(b) since natural gas and No.2 fuel oil would be the only fuel sources.

Expected Emissions:

The maximum expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, from the largest emission source in the small fuel oil boiler category (Portable Boiler 1 – 8.37 MMBtu/hr) are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	0.12	0.53
$S0_2$	4.26	18.65
NO_x	1.20	5.25
CO	0.69	3.02
VOC	0.05	0.20

The maximum total expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, from all the small fuel oil boilers are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	0.45	1.99
$S0_2$	16.11	70.57
NO_x	4.54	19.88
CO	2.61	11.43
VOC	0.17	0.75

Periodic Monitoring for Buildings 4675 Fuel Oil Boilers and Portable Boiler 1:

To ensure that compliance with the fuel oil sulfur content limit is maintained, the Permittee shall either:

(a) obtain a certification from the fuel supplier consisting of the name of the oil supplier and a statement from the supplier that the oil complies with the specifications under the definition of distillate oil, or

(b) Collect oil samples from the fuel tank for each boiler immediately after the fuel tank is filled and before any oil is combusted. The permittee shall analyze the oil sample to determine the sulfur content of the oil in accordance with procedures found in ASTM D 129-64. If a partially empty fuel tank is refilled, a new sample and analysis of the fuel in the tank will be required upon filling. Results of the fuel analysis taken after each new oil shipment of oil is received shall be used as the daily value when calculating the 30-day rolling average of fuel oil sulfur content until the next shipment is received. If the fuel analysis shows that the sulfur content in the fuel tank is greater than 0.5 weight percent sulfur, the permittee shall ensure that the sulfur content of subsequent oil shipments is low enough to cause the 30-day rolling average sulfur content to be 0.5 weight percent sulfur or less.

ADEM Admin. Code R. 335-3-16-.05(c)

The flame appearance shall be monitored daily to ensure that the proper combustion parameters are maintained these boilers.

ADEM Admin. Code R. 335-3-16-.05(c)

The boiler efficiency shall be monitored to ensure the proper combustion parameters are maintained in the boilers based on the type and amount of fuel being burned in the boilers.

ADEM Admin. Code R. 335-3-16-.05(c)

Periodic inspections of these boilers shall be performed to include inspections of tubes, burners, and control valves to ensure the boilers operate as designed.

ADEM Admin. Code R. 335-3-16-.05(c)

Based on the low level of expected emissions, Portable Boilers 2, 3, and 4 have no additional requirements other than those in the General Provisos.

N/A

CAM

These sources are not subject to CAM since they do not have a control device.

Recordkeeping and Reporting for Buildings 4675 Fuel Oil Boilers and Portable Boiler 1:

Records of the fuel oil supplier certifications and any results of fuel oil sulfur content testing shall be maintained for a period of no less than five years following the date of generation.

ADEM Admin. Code R. 335-3-16-.05(c)

Daily records of flame appearance checks and monthly calculations of the boiler efficiency shall be maintained. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

ADEM Admin. Code R. 335-3-16-.05(c)

Records of boiler inspections and maintenance performed shall be kept in a form suitable for inspection. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

ADEM Admin. Code R. 335-3-16-.05(c)

Based on the low level of expected emissions, Portable Boilers 2, 3, and 4 have no additional requirements other than those in the General Provisos.

N/A

Building 4707 Natural Gas Boiler (16.738 MMBtu/hr)

NSPS

This boiler was constructed prior to June 9, 1989, and not subject to 40 CFR Part 60 Subpart Dc, "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units".

Emissions Standards:

Opacity Standards:

This source shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%.

ADEM Admin. Code R. 334-3-4-.01(1).

Particulate Matter Emission Standards:

Particulate matter emission from this boiler shall not exceed the allowable set by Rule 335-3-4-.03(1).

This section limits particulate matter emissions from fuel burning equipment. This is calculated using the fuel burning equipment equation:

$E = 1.38H^{-0.44}$
Where E = Emissions in pounds per million BTU

H = Heat Input in millions of BTU/hr

ADEM Admin. Code R. 335-3-4-.03-(1)

Emissions from this boiler are expected to be well below the allowable emission rate since natural gas would be the only fuel source.

SO_2 Emission Standards:

This unit shall burn natural gas only.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

Sulfur Dioxide emissions from the boiler shall not exceed the allowable set by Rule 335-3-5-.01.

This section limits sulfur dioxide emissions from fuel burning equipment to 4.0 pounds per million BTU of heat input, for Category II counties.

ADEM Admin. Code R. 335-3-5-.01(1)(b)

Emissions from the boiler are expected to be well below the allowable emission rate set by Rule 335-3-5-.01(1)(b) since natural gas would be the only fuel source.

Expected Emissions:

The maximum expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	0.12	0.55
$S0_2$	0.01	0.04
NO_x	1.64	7.19
CO	1.38	6.04
VOC	0.09	0.40

Periodic Monitoring:

The flame appearance shall be monitored daily to ensure that the proper combustion parameters are maintained in the boiler.

ADEM Admin. Code R. 335-3-16-.05(c)

The boiler efficiency shall be monitored to ensure that the proper combustion parameters are maintained in the boiler based on the type and amount of fuel being burned in the boiler.

ADEM Admin. Code R. 335-3-16-.05(c)

Periodic inspections of the boiler shall be performed to include inspections of tubes, burners, and control valves to ensure that the boiler operates as designed.

ADEM Admin. Code R. 335-3-16-.05(c)

CAM

This source is not subject to CAM since it does not have a control device.

Recordkeeping and Reporting:

Daily records of flame appearance checks and monthly calculations of the boiler efficiency shall be maintained. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

ADEM Admin. Code R. 335-3-16-.05(c)

Records of the boiler inspections and maintenance performed shall be kept in a form suitable for inspection. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

ADEM Admin. Code R. 335-3-16-.05(c)

Fuel Oil Boilers - Appendix C

These boilers are classified as Fuel Oil Boilers. These boilers burn No. 2 fuel oil or natural gas only. The following boilers fit this category:

Appendix C–Fuel Oil Boilers		
Building Number	**Unit #**	**Rated Capacity (MMBTU/hr)**
4567	4567-BR-01	14.20
4567	4567-BR-02	12.60
4567	4567-BR-03	12.555
4660	4660-999-01	12.60
4660	4660-999-02	12.60
4660	4660-999-03	12.60

NSPS

Boiler 4567-BR-03 is subject to the applicable requirements of 40 CFR Part 60 Subpart Dc, "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units". All other Appendix C Boilers were constructed prior to the NSPS applicability date.

Emissions Standards:

Opacity Standards:

These sources shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%.

ADEM Admin. Code R. 334-3-4-.01(1).

Particulate Matter Emission Standards:

Particulate matter emissions from each boiler shall not exceed the allowable set by Rule 335-3-4-.03(1).

This section limits particulate matter emissions from fuel burning equipment. This is calculated using the fuel burning equipment equation:

$E = 1.38H^{-0.44}$
Where E = Emissions in pounds per million BTU

H = Heat Input in millions of BTU/hr

ADEM Admin. Code R. 335-3-4-.03-(1)

Emissions from these boilers are expected to be well below the allowable emission rate since natural gas and No.2 fuel oil would be the only fuel sources.

Emissions of particulate matter from the Building 4567-3 Boiler (4567-BR-03) shall not exceed 0.45 lb/hr.

ADEM Admin. Code R. 335-3-14-.04 (PSD)

SO_2 Emission Standards:

These units shall burn natural gas and No. 2 fuel oil only. The sulfur content of the No.2 fuel oil shall not exceed 0.5% by weight.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

Sulfur Dioxide emissions from each boiler shall not exceed the allowable set by Rule 335-3-5-.01.

This section limits sulfur dioxide emissions from fuel burning equipment to 4.0 pounds per million BTU of heat input, for Category II counties.

ADEM Admin. Code R. 335-3-5-.01(1)(b)

Emissions from the boilers are expected to be well below the allowable emission rate set by Rule 335-3-5-.01(1)(b) since natural gas and No. 2 fuel oil would be the only fuel sources.

NO_x Emission Standards:

Emissions of Nitrogen Oxides from the Building 4567-3 Boiler (4567-BR-03) shall not exceed 2.16 lbs/hr.

ADEM Admin. Code R. 335-3-14-.04 (PSD)

CO Emission Standards:

Emissions of Carbon Monoxide from the Building 4567-3 Boiler (4567-BR-03) shall not exceed 0.45 lbs/hr.

ADEM Admin. Code R. 335-3-14-.04 (PSD)

VOC Emission Standards:

Emissions of Volatile Organic Compounds from the Building 4567-3 Boiler (4567-BR-03) shall not exceed 0.18 lbs/hr.

ADEM Admin. Code R. 335-3-14-.04 (PSD)

Expected Emissions:

The maximum expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, from the largest emission source in the fuel oil boiler category (Building 4567 – 14.20 MMBtu/hr) are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	0.20	0.89
$S0_2$	7.22	31.63
NO_x	2.03	8.91
CO	1.17	5.12
VOC	0.08	0.34

The maximum total expected emissions, based on AP-42 emission factors and operating 8,760 hours per year, from all the fuel oil boilers are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	1.11	4.84
$S0_2$	39.24	171.87
NO_x	11.05	48.42
CO	6.35	27.83
VOC	0.42	1.82

Periodic Monitoring:

To ensure that compliance with the fuel oil sulfur content limit is maintained, the Permittee shall either:

(a) obtain a certification from the fuel supplier consisting of the name of the oil supplier and a statement from the supplier that the oil complies with the specifications under the definition of distillate oil, or

(b) Collect oil samples from the fuel tank for each boiler immediately after the fuel tank is filled and before any oil is combusted. The Permittee shall analyze the oil sample to determine the sulfur content of the oil in accordance with procedures found in ASTM D 129-64. If a partially empty fuel tank is refilled, a new sample and analysis of the fuel in the tank will be required upon filling. Results of the fuel analysis taken after each new oil shipment of oil is received shall be used as the daily value when calculating the 30-day rolling average of fuel oil sulfur content until the next shipment is received. If the fuel analysis shows that the sulfur content in the fuel tank is greater than 0.5 weight percent sulfur, the Permittee shall ensure that the sulfur content of subsequent oil shipments is low enough to cause the 30-day rolling average sulfur content to be 0.5 weight percent sulfur or less.

ADEM Admin. Code R. 335-3-16-.05(c)

The flame appearance shall be monitored daily to ensure that the proper combustion parameters are maintained in these boilers.

ADEM Admin. Code R. 335-3-16-.05(c)

The boiler efficiency shall be monitored to ensure that the proper combustion parameters are maintained in the boilers based on the type and amount of fuel being burned in the boilers.

ADEM Admin. Code R. 335-3-16-.05(c)

Periodic inspections of the boilers shall be performed to include inspections of tubes, burners, and control valves to ensure the boilers operate as designed.

ADEM Admin. Code R. 335-3-16-.05(c)

CAM

These sources are not subject to CAM since they do not have a control device.

Recordkeeping and Reporting:

The fuel oil supplier certifications and the results of any fuel oil sulfur content testing shall be maintained for a period of no less than five years following the date of generation.

ADEM Admin. Code R. 335-3-16-.05(c)

Daily records of the flame appearance checks and monthly calculations of the boiler efficiency shall be maintained. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

ADEM Admin. Code R. 335-3-16-.05(c)

Records of boiler inspections and maintenance performed shall be kept in a form suitable for inspection. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

ADEM Admin. Code R. 335-3-16-.05(c)

NSPS Reporting/Recordkeeping – Boiler 4567-BR-03:

Records of the fuel combusted in Boiler 4567-BR-03 during each calendar month must be kept in a permanent form suitable for inspection. The records shall be retained for at least five (5) years following the date of generation of the record.

ADEM Admin. Code R 335-3-10-.02(2)(c) (§60.48c(g) NSPS)

Internal Combustion Engines (Diesel Engine Pumps)

These units are used to power water pumps. There are 7 engines at Building 4567 (five 872 hp and two 1,355 hp) and 13 engines at Building 4667 (2,577 hp, each). The two 1,355 hp engines (X013) in Building 4567 have PSD avoidance limits for NOx and SO_2 emissions.

MACT

These sources are subject to the applicable requirements of Subpart ZZZZ of 40 CFR Part 63. Since these engines are existing compression ignition, they do not have to meet the requirements of Subpart ZZZZ and Subpart A

Emissions Standards:

SO_2 Emission Standards:

Building 4567 – Two 1355 hp Engines (X013):

Unit Nos. 4567-999-08 and 09 shall burn No. 2 fuel oil only. The sulfur content of the No.2 fuel oil shall not exceed 0.5% by weight.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

NOx Standards:

Building 4567 – Two 1355 hp Engines (X013):

Emissions of Nitrogen Oxides from Unit Nos. 4567-999-08 and 09 shall not exceed 3.2 lbs/MMBtu.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

Unit Nos. 4567-999-08 and 09 shall burn no more than a total of 163,741 gallons of diesel fuel in any consecutive twelve month period.

ADEM Admin. Code R. 335-3-14-.04 (PSD Avoidance)

The five 872 hp engines in Building 4567 and the 13 engines at Building 4667 (2,577 hp, each) are not subject to any emission standards other than the applicable standards contained in the general provisos.

Expected Emissions:

The expected emissions, based on AP-42 emission factors and actual operation of 500 hours per year, from the largest emission source (Building 4667 – 2,577 hp) are as follows:

Pollutant	Potential Emissions (lb/hr)	Potential Emissions (TPY)
PM	1.80	0.45
$S0_2$	10.31	2.58
NO_x	61.85	15.46
CO	14.17	3.54
VOC	1.82	0.45

Periodic Monitoring:

Due to the type of operation and sparse operating time, no periodic monitoring is required.

CAM

CAM is not applicable to the combustion engines since they do not use a control device.

Recordkeeping and Reporting:

Building 4567 – Two 1355 hp Engines (X013):

Records of fuel oil sulfur content must be kept in a form suitable for inspection. Fuel supplier certifications may be used as records for fuel oil sulfur content. These records shall be retained for at least five years following the date of generation and shall be made available upon request.

Records of monthly and twelve (12) month rolling totals of fuel oil usage shall be maintained in a form suitable for inspection for a period of five (5) years from the date the fuel oil is consumed.

ADEM Admin. Code R. 335-3-16-.05(c)

Surface Coating Operations

Building 4471 Coating of Spacecraft Models and Beams – 4471-191-01
This booth is used to paint small spacecraft models and beams. Hand held dispensers and spray cans are used for painting. A water curtain is used to control particulate emissions.

Building 4612 Surface Coating of Metal Test Panels – 4612-1111-01
This booth is used to paint 5" x 7" and 6" x 8" metal test panels. The particulate emissions are controlled by a particulate filter**.**

Building 4631 Paint Booth – 4631-X010
This booth is used to paint small aircraft models. A water curtain is used to control particulate emissions. This unit is covered under Air Permit 709-0014-X010. This unit is considered an insignificant activity in regards to Title V and is included in MSFC's Title V list of insignificant activities.

Building 4650 Maintenance Painting – 4650-PB-01
This booth is a 9'x12' booth used to paint miscellaneous parts for facility maintenance purposes. A water curtain is used to control particulate emissions.

Building 4707 Surface Coating of Test Panels – 4707-130-01
This booth is used to apply a topcoat to test panels. The particulate emissions are controlled by a particulate filter**.**

Building 4707 Foam Insulation Application – 4707-SOFI
This booth is used to apply foam insulation to test parts. The particulate emissions are controlled by a particulate filter.

Building 4739 Surface Coating of Foam Insulation – 4739-SOFI (X012)
The booth is used for the research and development of insulating foams used on various parts of space vehicles. The foam consists of diphenylmethane diisocyanate (the base) and a urethane resin (the catalyst). Particulate matter emissions are controlled by a particulate filter.

Building 4760 Coating of Space Vehicle Component Parts– 4760-Paint
This booth is used to paint metal component parts of space vehicles.

Building 4765 Thermal Protection System Development Facility – 4765 (X014)
Multi component primers and Spray on Foam Insulation (SOFI) materials are robotically spray-applied to test materials in the spray booth. The primer material is a multipart catalyzed epoxy polyamide type material consisting of a base material, a catalyst, and a solvent. The SOFI consist of MDI type isocyanate, polyol resins and a HCFC or HFC blowing agent. The booth includes a 3 stage particulate filter system.

Building 4765– 4765 (X014) Emissions Standards:

VOC Emissions Standards:

Emission of Volatile Organic Compounds (VOCs) from all operations at the Building 4765 Paint Booth (4765-X014) including, but not limited to surface coating, storage, cleanup, etc., shall not exceed 39 tons per year (TPY) in any consecutive rolling 12-month period based on the premise that all VOCs applied are emitted.

ADEM Admin. Code R. 335-3-14-.04 (Anti-PSD)

HAP Emissions Standards:

Emission of Hazardous Air Pollutants (HAPs) from all operations at the Building 4765 Paint Booth (4765-X014) including, but not limited to surface coating, storage, cleanup, etc., shall not exceed 9.5 tons per year (TPY) of any single HAP or 23.5 TPY of any combination of HAPs in any consecutive rolling 12-month period based on the premise that all HAPs applied are emitted or are emitted to an emission control device with a control efficiency.

ADEM Admin. Code R. 335-3-14-.06 (Anti-112g)

Expected Emissions:

Expected emissions are based on mass balance, actual or expected paint usage.

Building	Unit #	PM (TPY)	VOCs (TPY)	HAPs (TPY)
4650	4650-PB-01	0.007	0.053	0.053
4707	4707-130-01	3E-04	0.14	0.14
4707	4707-SOFI	0.013	1.30	1.30
4739	4739-SOFI	0.0103	0.00	1.03
4760	4760-Paint	0.010	0.033	0.056
4765	4765-X014	0.09	12.98	2.37

Periodic Monitoring all units:

The filters(s) associated with these sources shall be inspected on at least an annual basis to ensure maintenance is performed in such a manner as to minimize the emission of particulate matter.

ADEM Admin. Code R. 335-3-16-.05(c)

CAM

These sources are not subject to CAM since the uncontrolled potential emissions would be less than the major source threshold.

Recordkeeping and Reporting All Units:

Records of the required filter inspections, along with records of any maintenance performed on the filter(s) shall be kept in a form suitable for inspection for at least five years following the date of generation of the record.

ADEM Admin. Code R. 335-3-16-.05(c)

Recordkeeping and Reporting - Building 4765– 4765 (X014):

Accurate and understandable records, concerning VOC and HAP emissions from the Building 4765 Paint Booth (4765-X014) shall be kept in a form suitable for inspection for at least 5 years following the date of the record. These records will be made available immediately upon request and will contain the following information:

(a) The type, quantity in gallons, and weight in lbs, of each VOC and HAP containing

materials used each calendar month.

(b) The VOC content by weight (in pounds per gallon) of each VOC containing materials used shall be determined either by using EPA Test Method 24, as defined in 40 CFR 60, Appendix A, or equivalent vendor data approved by the Department in advance. The VOC content of coatings may be determined by test method on a random basis to verify formulation data and such other times as the Department may request.

(c) The HAP content by weight (in pounds per gallon) of each coating used shall be determined using EPA Test Method 311, as defined in 40 CFR 63, Appendix A, or equivalent vendor data approved by the Department in advance.

(d) The percent by volume and percent by weight of VOCs, HAPs, solids, water, and content of each VOC and HAP containing materials used each calendar month.

(e) Complete inventories of HAP and VOC containing materials (their usage and HAP and VOC content) shall be made at the end of each calendar month. Compliance with HAP and VOC limits shall be based upon these monthly materials use inventories and the use and control efficiency of the particulate filters. Emissions calculations and records will also incorporate the use and control efficiency of the particulate filters.

(f) The amount of VOCs and HAPs emitted each calendar month expressed in the units of pounds and tons.

(g) The rolling 12-month total of VOCs and HAPs emitted in the units of pounds and tons.

ADEM Admin. Code R. 335-3-16-.05(c)

Batch Vapor Degreaser (non – HAP)

Building 4711 has a Batch Vapor Degreaser. However, no HAP based solvents are used, therefore this unit is not subject to 40 CFR 63 Subpart T.

Emissions Standards:

The degreaser is not subject to any emissions standards other than those listed in the general provisos.

Expected Emissions:

VOC Emissions:

The expected VOC emissions are 1.47 lbs/hr (6.42 TPY) based on actual usage and material balance.

Periodic Monitoring:
Since there are no emission standards applicable to the degreaser and due to the low level of expected emissions, no periodic monitoring is warranted.

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100 TPY and there is no control device.

Recordkeeping and Reporting:
This source is subject to no additional specific requirements other than those listed in the General Permit Provisos.

Hand Wipe Cleaning
Manual hand wipe cleaning using solvents is conducted throughout the facility. Hand wipe cleaning includes cleaning residual fluid spills during engine/parts repairs, removing residual hydraulic fluids or adhesives, and cleaning metal test panels.

Emissions Standards:
This operation is not subject to any emissions standards other than those listed in the general provisos**.**

Expected Emissions:

VOC:

The expected VOC emissions are 0.18 lbs/hr (0.79 TPY) based on actual usage and material balance.

HAP:

The expected HAP emissions are 0.29 lbs/hr (1.28 TPY) based on actual usage and material balance.

Periodic Monitoring:

Since there are no emission standards applicable and due to the low level of expected emissions, no periodic monitoring is warranted.

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100 TPY and there is no control device.

Recordkeeping and Reporting:
This source is subject to no additional specific requirements other than those listed in the General Permit Provisos.

Pipe Cleaning
This operation involves cleaning pipelines carrying liquid oxygen or fuels. This requires flushing the pipeline with TCA.

Emissions Standards:

TCA:

The expected TCA emissions are 3.84 lbs/hr (4.00 TPY) based on actual usage and material balance.

Periodic Monitoring:
Since there are no emission standards applicable and due to the low level of expected emissions, no periodic monitoring is warranted.

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100 TPY and there is no control device.

Recordkeeping and Reporting:
This source is subject to no additional specific requirements other than those listed in the General Permit Provisos.

Air Stripper
The air stripper is used to remove residual trichloroethylene from groundwater recovered from sumps in the West Test Area. The air stripper off gas is released to the atmosphere and the treated water is pumped to a pond onsite.

Emissions Standards:

TCE:

The expected TCE emissions are 0.15 lbs/hr (0.67 TPY) based on air stripper design.

Periodic Monitoring:

Since there are no emission standards applicable and due to the low level of expected emissions, no periodic monitoring is warranted.

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100 TPY and there is no control device.

Recordkeeping and Reporting:
This source is subject to no additional specific requirements other than those listed in the General Permit Provisos.

Sand Blasting Operations
Sand blasting operations are conducted in Building 4745. Building 4745 is partially enclosed on two sides and roofed. The emissions from this operation are considered fugitive.

Emissions Standards:
This source is subject to no additional specific emission standards other than those listed in the General Permit Provisos.

Periodic Monitoring:
Since there are no emission standards applicable no periodic monitoring is warranted.

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100 TPY and there is no control device.

Recordkeeping and Reporting:
This source is subject to no additional specific requirements other than those listed in the General Permit Provisos

Grit Blaster
This operation utilizes a handheld blast nozzle to clean various parts. The emissions are controlled by a dust collection system.

Emissions Standards:

Opacity Standards:

This source shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%.

ADEM Admin. Code R. 334-3-4-.01(1).
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Particulate Matter Emission Standards:

Particulate matter emissions from this unit shall not exceed the allowable set by Rule 335-3-4-.04.

ADEM Admin. Code R. 335-3-4-.04-(2)

Expected Emissions:
The expected PM emissions would be 0.68 lb/hr (2.97 TPY) based on a Texas Commission on Environmental Quality emission factor and 8,760 hours of operation.

Periodic Monitoring:
Based on the low level of expected emissions from this source as compared to the regulatory allowable no periodic monitoring is required.

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100 TPY.

Recordkeeping and Reporting:
This source is subject to no additional specific requirements other than those listed in the General Permit Provisos.

Bulk Plant
The Bulk Plant consist of one 20,000 Gallon Gasoline Storage Tank (4611-1). The three other gasoline storage tanks (4632, 4633, and 4636) have been removed from the facility.

Emissions Standards:

VOC:

This source is subject to the applicable requirements of ADEM Admin. Code R. 335-3-6-.05, "Bulk Gasoline Plants."

ADEM Admin. Code R. 335-3-6.05

The Permittee shall not permit the unloading of gasoline into stationary storage tanks unless each tank is equipped with a vapor balance system as described in ADEM Admin. Code R. 335-3-6-.05(6) and approved by the director; and

(a) each tank is equipped with a submerged fill pipe, approved by the Director; or
(b) Each tank is equipped with a fill line whose discharge opening is not over 18 inches from the bottom of the tank.

ADEM Admin. Code R. 335-3-6-.05(3)

The Permittee shall not permit the unloading of tank trucks or trailers at a bulk gasoline plant unless each tank truck or trailer is equipped with a vapor balance system as described in ADEM Admin. Code R. 335-3-6-.05(6) and complies with ADEM Admin. Code R. 335-3-6-.20(3)

ADEM Admin. Code R. 335-3-6-.05(4)

The Permittee shall not allow the transfer of gasoline between tank truck or trailer and stationary storage tank unless:

(a) The transfer is conducted in accordance with paragraphs 3 and 4 of ADEM Admin. Code R. 335-3-6-.05

(b) The vapor balance system is in good working order and is connected and operating; and

(c) Gasoline tank truck or trailer hatches are covered at all times during unloading operations; and

(d) There are no leaks in the tank trucks' and trailers' pressure/vacuum relief valves and hatch covers, or the truck tanks or storage tanks, or associated vapor and liquid lines during unloading; and

(e) The pressure relief valves on above-ground storage vessels and tank trucks or trailers are set to release at no less than 4.8 kPA (0.7 psia) or the highest possible pressure (in accordance with state or local fire codes or the National Fire Prevention Association guidelines) ; and

(f) The gasoline truck or trailer has a valid Department Air Sticker as required by Rule 335-3-6-.20(4) attached and visibly displayed.

ADEM Admin. Code R. 335-3-6-.05(5)

The Permittee shall not permit the loading of gasoline into tank trucks or trailers that are returning with vapors from gasoline dispensing facilities affected by ADEM Admin. Code R. 335-3-6-.07 unless each tank truck or trailer and the stationary storage tank is equipped with a vapor balance system as described in ADEM Admin. Code R. 335-3-6-.06(6) and complies with ADEM Admin. Code 335-3-6-.20(3) and

(a) equipment is available at the bulk gasoline plant to provide for the submerged filling of each tank truck or trailer; or

(b) each tank truck or trailer is equipped for bottom filling.

ADEM Admin. Code R. 335-3-6-.05(7)

The Permittee shall not permit the disposal of waste gasoline in sewers, open containers, or in a manner that would result in evaporation.

ADEM Admin. Code R. 335-3-6-.05(8)

Expected Emissions:

VOC:

The expected VOC emissions, based on maximum expected throughput and calculated using Tanks 4.0, would be 2.07 TPY

Periodic Monitoring:

The Permittee shall inspect the bulk plant during each loading and unloading of tank truck or trailer for visible liquid leaks.

ADEM Admin. Code R. 335-3-16-.05(c)

CAM

This source is not subject to CAM since it does not have pre-controlled potential emission of greater than 100TPY.

Recordkeeping and Reporting:

Records of the monthly throughput from the bulk gasoline plant shall be maintained

ADEM Admin. Code R. 335-3-16-.05(c)

Propulsion Engine and Launch Vehicle System Testing

This operation includes solid rocket motors testing (SRM), hybrid rocket motors testing (HPP), RP-1 engines testing (RP-1), and a radiant lamp facility (RLF). Testing is conducted at MSFC for NASA's space shuttle program. Combustion products are emitted from the exhaust of the rocket motors. The Radiant Lamp Facility is used to thermal test insulating foam materials for thermal degradation.

MACT

These units are affected sources under 40 CFR Part 63 Subpart PPPPP. However, since these units are existing sources, there are no requirements under this subpart.

Emissions Standards:

These operations are not subject to any standards other than the applicable standards contained in the general provisos.

Expected Emissions:
The expected emissions are based on expected fuel usage and emissions factors.

Pollutant	SRM (TPY)	HPP (TPY)	RP-1 (TPY)	RLF (TPY)
PM	11.00	188	11.80	0.00
NO_x	2.33	1.80	2.61	0.00
SO_2	0.00	0.00	10.00	0.00
CO	0.10	94.60	3,012	19.60
VOC	0.00	0.00	2.29	1.37
HAPs	7.87	63.00	0.17	0.55

Periodic Monitoring:
Due to the type of operation and sparse operating time, no periodic monitoring is required.

CAM

CAM is not applicable to the engine test since they do not use a control device, and they have no emission limits.

Recordkeeping and Reporting:
These sources are subject to no additional specific requirements other than those listed in the general Permit Provisos.

Emergency Generators
Diesel fired emergency generators are located throughout MSFC. These generators are used to provide back-up emergency power and operate less than 500 hours per year. All the emergency generators located at MSFC except the following are listed on Redstone Title V trivial and insignificant list.

- Building 4601- **27.1 Hp Diesel Emergency Generator**
- Building 4208 - **2919 Hp (2180 KW) Diesel Emergency Generator**
- Building 4250- **80.4 Hp Diesel Emergency Generator**

NSPS
These units are subject to the applicable portions of 40 CFR 60 Subpart IIII- Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

Emissions Standards:

NSPS IIII Standards:

These units must be certified according to 40 CFR 60 Subpart IIII for the same model year and maximum engine power.

40 CFR Part 60 Subpart IIII §60.4205

These units must be installed and configured according to the manufacturer's specifications.

40 CFR Part 60 Subpart IIII §60.4211(c)

The owner or operator of these units must install a non-resettable hour meter prior to startup of the engines.

40 CFR Part 60 Subpart IIII §60.4209(a)

These units must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

40 CFR Part 60 Subpart IIII §60.4207(a)

Beginning October 1, 2010, these units must use diesel fuel that meets the requirements of 40 CFR 80.510(b).

40 CFR Part 60 Subpart IIII §60.4207 (b)

The facility must operate and maintain these units according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

40 CFR Part 60 Subpart IIII §60.4206

Any operation of these units, other that emergency operation, maintenance, and testing, is prohibited. Maintenance checks and readiness testing is limited to 100 hours per year.

40 CFR Part 60 Subpart IIII §60.4211(e)

Expected Emissions:

The expected emissions are based on AP-42 emission factors, manufacturer's certifications, and a maximum operation of 500 hours per year.

	Building 4208		Building 4250		Building 4601	
Pollutant	**(lb/hr)**	**(TPY)**	**(lb/hr)**	**(lb/hr)**	**(lb/hr)**	**(TPY)**
SO	11.80	2.95	0.055	0.055	0.16	0.04
NO	30.70	0.10	0.83	0.83	0.62	0.16
CO	16.80	4.19	0.18	0.18	0.66	0.17
PM	0.96	0.24	0.06	0.06	0.05	0.01
VOC	2.06	0.515	0.068	0.068	0.20	0.05

Periodic Monitoring:
Due to the type of operation and sparse operating time, no periodic monitoring is required.

CAM

These sources are not subject to CAM since they do not have a control device.

Recordkeeping and Reporting:
These sources are subject to no additional specific requirements other than those listed in the General Permit Provisos.

Recommendation
Based on the above analysis and pending the resolution of any comments received during the 30-day public comment period and 45 day EPA review, I recommend renewing Marshall Space Flight Center's Title V MSOP

Charles Killebrew
Industrial Minerals Sections
Energy Branch
Air Division

March 30, 2010
Date